

New instruments to isolate the coronal heating mechanism

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The coronal heating problem remains unsolved today, 80 years after its discovery, despite 50 years of suborbital and orbital coronal observatories. Tens of theoretical coronal heating mechanisms have been suggested, but only a few have been able to be ruled out. In this talk, we will explore the reasons for the slow progress and discuss the measurements that will be needed for potential breakthrough, including imaging the solar corona at small spatial scales, measuring the chromospheric magnetic fields, and detecting the presence of high temperature, low-emission measure plasma. We will discuss three sounding rocket instruments developed to make these measurements: the High-resolution Resolution Coronal Imager (Hi-C), the Chromospheric Lyman-Alpha Spectropolarimeter (CLASP), and the Marshall Grazing Incidence X-ray Spectrometer (MaGIXS).